

El Niño Bulletin #3

January 7, 2003

Highlights:

- A moderate El Niño event is underway, and is strengthening.
- Drier-than-normal conditions are likely to persist across much of the subcontinent throughout the 2003 growing season.
- Comparisons with two recent moderate El Niño events suggest that this current El Niño may extend well into 2004, peaking in the first quarter of next year.
- Mid-growing-season rainfall accumulations show deficiencies across nearly the entire subcontinent.
- WFP's forecast for the remainder of the growing season suggest that with a few exceptions, rainfed maize yields can be expected to be low. There is no prospect of a relief of the emergency situation.
- Indeed, current conditions and the forecast suggest a need for enhanced operations during 2003.
- Tropical cyclone Delfina may have lifted drought conditions in parts of the region, but concomitantly associated flooding has destroyed some maize areas and damaged others.

This edition of the Bulletin contains an update of the state of the current El Niño event, shows how the region's growing-season rainfall is being affected, provides a snapshot of the tropical cyclone Delfina that left four people dead and more than 15,000 homeless in Malawi while causing extensive damage to desperately-needed maize crops, and offers a forecast of January-March rainfall based on a similarity to previous moderate El Niño events.

Current El Niño Conditions

Sea surface temperature (SST) anomalies (departures from average) increased across the Pacific in November (Figure 1).¹ Atmospheric indicators correspondingly reflect the presence of El Niño.

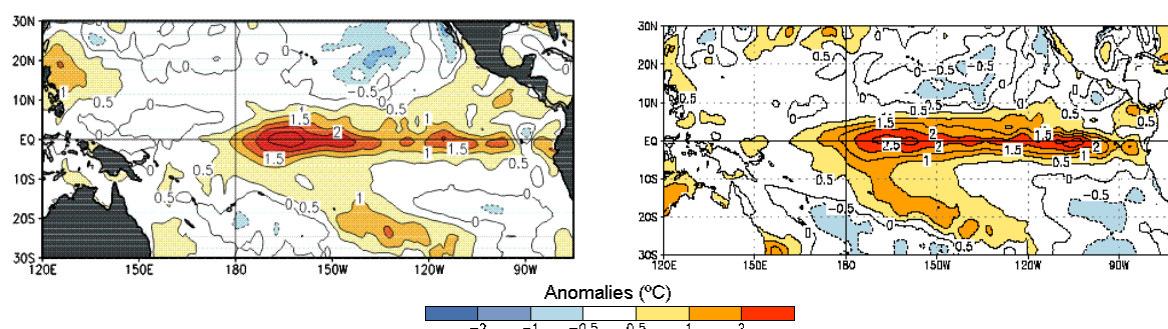


Figure 1. October (left) and November (right) 2002 sea-surface temperature anomalies (departures from average), computed on 1971-2000 mean values. The tongue of warm water along the equator is typical of El Niño events.

NOAA has not yet posted the January update of the magnitude of this event. The same chart as in last month's report is included below (Figure 2),² depicting the current El Niño event's magnitude compared to the seven strongest events measured since 1950 (i.e., with approximately 15 events of various magnitudes having taken place). Note that the more recent El Niño events (1982/83, 86/87, and 91/92) took longer to mature, typically reaching their peaks in the spring of the second year. Since the current event is tracking the 86/87 and 91/92 events, the implication of this is that **there is a possibility that this El Niño will likewise extend into 2004.**

¹ http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/enso_advisory/

² http://www.cdc.noaa.gov/ENSO/enso.mei_index.html

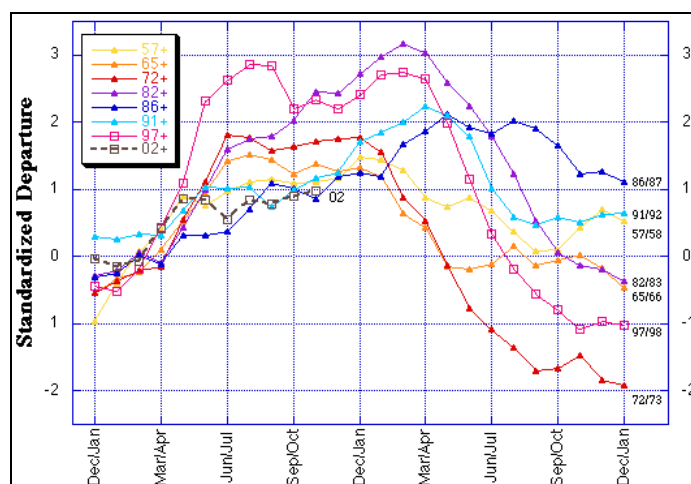
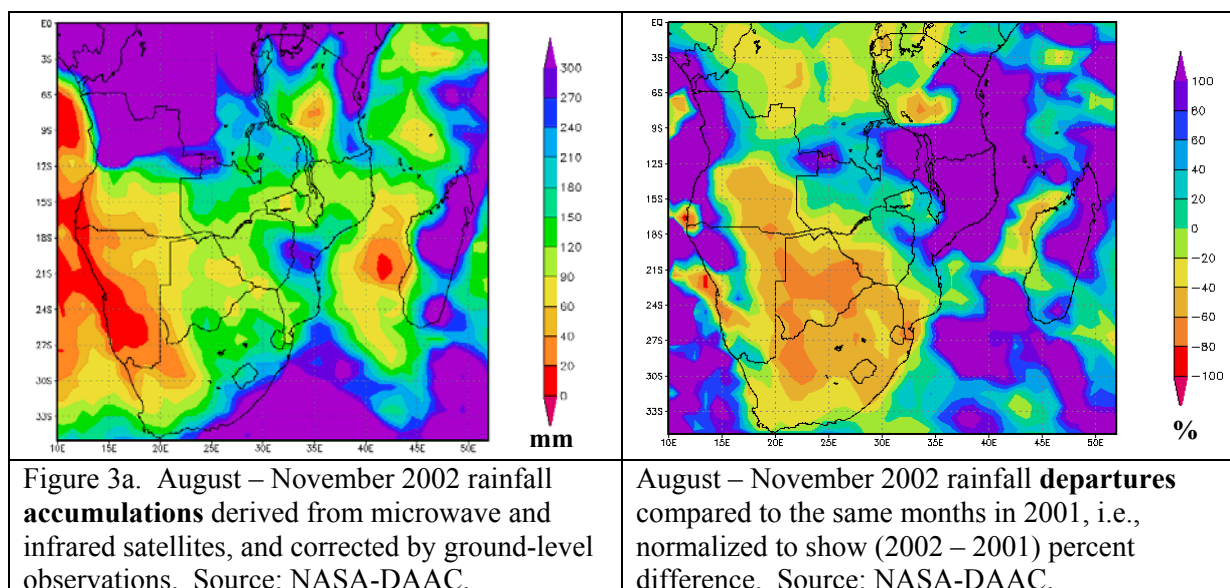


Figure 2. A comparison of the current El Niño event (denoted 02+) with the seven strongest events since 1950. The data points conform to a “multivariate ENSO index,” consisting of a weighted average of the following six variables: sea-level pressure, the east-west and north-south components of the surface wind, sea-surface and surface air temperatures, and total amount of cloudiness.

Growing Season Rainfall: August - November, 2002

Figure 3a shows a band of dry conditions covering nearly all of Namibia, and extending into central Angola. Comparisons with the same period in 2001 (Figure 3b) and with the 50-year mean (Figure 3d, with El Niño and La Niña months removed to produce a true “normal” climatology) confirm that these regions have substantially sub-par rainfall. The entire EMOP region, with the exception of a small corner of the tri-border area where South Africa, Zimbabwe, and Mozambique meet also have had drier-than-normal conditions. Compared to last year (Figure 3b), some areas of the EMOP region have had both more rainfall while other areas have had less rainfall.

The extent of the current rainfall deficit can best be seen in Figures 3c (absolute difference compared to “normal”) and 3d (percent difference compared to “normal”). **There is sound reason to be alarmed,** since the entire subcontinent, including Madagascar, with the exceptions of north western Angola, northern Tanzania, southwestern South Africa, and southernmost Namibia have been **drier or much drier this current growing season than “normal.”** Some areas of agricultural drought will have been relieved by tropical cyclone Delfina over the New Year, as shown below, but these rains may have come too late, and in too great a downpour, to be effective.



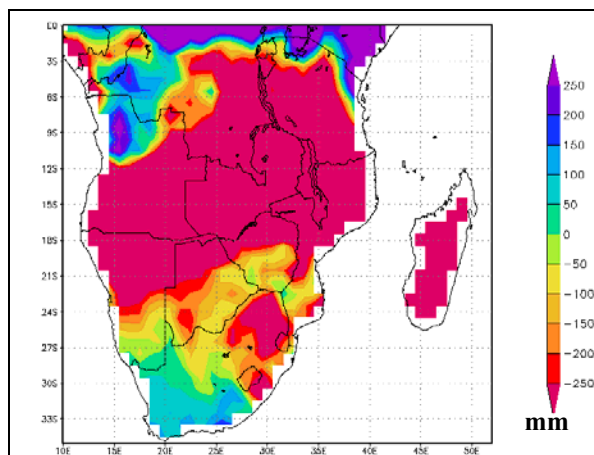


Figure 3c. Comparison of August – November rainfall **accumulations** with “normal” climate, i.e., the same months 1950-1999 that were *not* influenced by either El Niño or La Niña events. Source: NASA-DAAC.

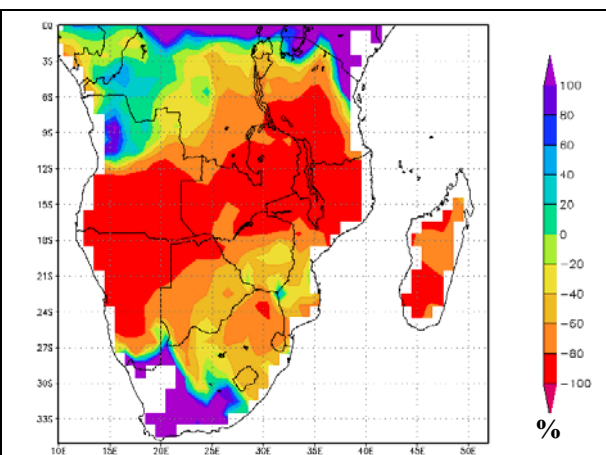


Figure 3d. August – November 2002 rainfall **departures**: [(rainfall Aug-Nov 2002) – (mean rainfall Aug-Nov 1950-1999, non-El Niño/La Niña months)]. Source: NASA-DAAC.

December 2002 Preliminary Estimates, and the Impact of Tropical Cyclone Delfina at Year's End

Rainfall accumulation estimates for December's dekads are shown in Figures 4a-4c. The effects of Delfina are included in Figure 4c, with the last days of the cyclone shown in Figure 4d.³ Northern Mozambique, Malawi, and Zambia received substantial rains during all dekads; conversely, Zimbabwe, Lesotho, and Swaziland had scant rainfall except during Dekad 2.

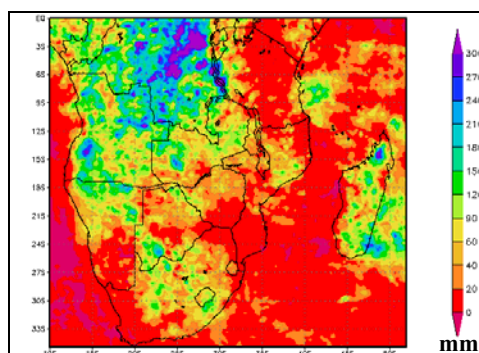


Figure 4a. December 1-10 (dekad 1) rainfall accumulation estimate.

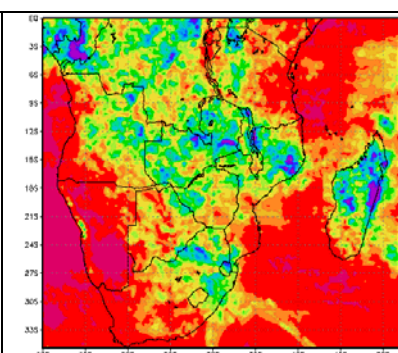


Figure 4b. December 11-20 (dekad 2) rainfall accumulation estimate.

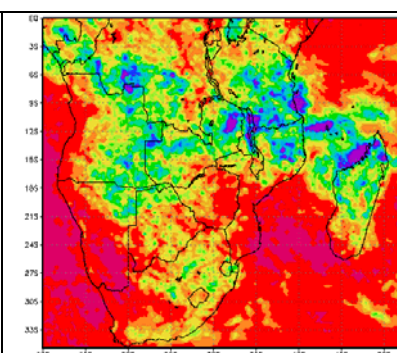


Figure 4c. December 21-30 (dekad 3) rainfall accumulation estimate.

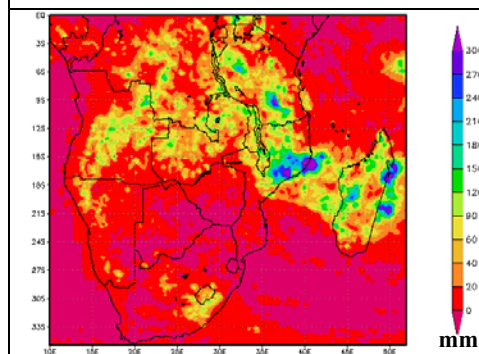


Figure 4d. December 31-January 3 rainfall accumulation estimate.

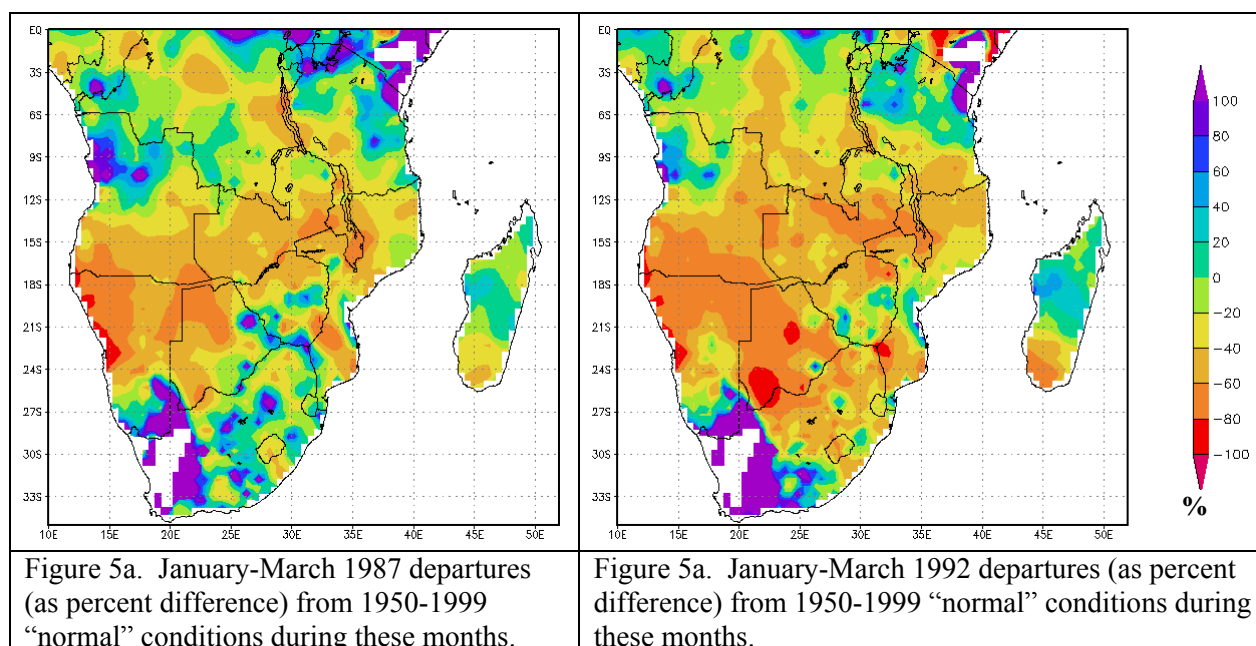
Note that Figure 4 is an unverified estimate. Errors from the algorithms that interpret the satellite data have not yet been “ground truth” corrected, that is, the data from surface meteorological measurements have not yet been included. Note also that the spatial resolution of rainfall in Figure 4 is much more precise than the maps above, since the grid resolution is 0.25° rather than the 1.0° of Figure 3.

³ http://www.news24.com/News24/Africa/News/0,1113,2-11-1447_1304015,00.html

Figures 4c and 4d show the heavy rains associated with tropical cyclone Delfina across northern Mozambique, southern Tanzania, and Malawi. In the case of Malawi, flooding destroyed some of the maize crop, and left 15,000 people homeless. Notably, the rainfall accumulations in Malawi were not substantially greater than in Mozambique, Tanzania, Zambia, or Madagascar. The fact that flooding of four rivers occurred is therefore much more likely to be due to watershed deforestation and land degradation than to the actual amount of the rainfall.

Forecast for January – March 2003

Based on the similarity in magnitude of the current El Niño event with those of 1986/87 and 1991/92, WFP offers a spatial forecast for January – March 2003. The two maps of Figure 5 show the departure of the two historic events from “normal” conditions as defined by the January-March quarter for all years 1950-1999 that had neither an El Niño nor a La Niña event occurring.



As with the comparison above of the first months of the growing season, the prognosis for the region is alarming. With the exceptions of parts of Zimbabwe, central Mozambique, central and northern Madagascar and Tanzania, southern Namibia, southwestern South Africa, and northwestern Angola, the subcontinent experiences lower to much lower rainfall during moderate El Niño events compared to “normal” years. Coming on the heels of drought conditions for the first half of the season (Figure 3d), **WFP expects the need for emergency food assistance to continue and grow during 2003.**

Questions may be directed to the author of this report via email, Lenard.Milich@WFP.org. The next Bulletin will be completed in approximately one month.